California 2001

An Energy Nightmare

Presentation to a Special Meeting of the Illinois Commerce Commission

8 February 2001

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PRICEWATERHOUSECOOPERS

California Historical Overview

- Legislation enacted in September 1996 after three years of regulatory and legislative discussion
- Legislative deal hammered out in marathon sessions; resulting in the creation of California Power Exchange (PX) and California Independent System Operator (ISO)
- In December, 1997 California issued rate reduction bonds for the SDG&E ($658m), PG&E ($2.9b) and SCE ($2.4b) Aggressive implementation timetable results in go-live market on March 31, 1998 -- three months after original date
- Due to a mandated residential rate reduction and stranded cost recovery provisions, few customers switched
- PX offered limited products in first year; forward market fully functioning in 1999

California Historical Overview

- Separate development and governance for PX and ISO results in numerous design and implementation conflicts and inconsistencies
- California Commission required PG&E and SCE to divest 50% of fossil generation; legal/regulatory framework for stranded cost recovery encouraged complete divestment by all three utilities
- In-state non-nuclear generation completely sold in 1998 and 1999 for significantly more than book value
- Major generator/marketers plan to use acquired assets as foundation for Western market strategy
- Success !! Generation sales allow SDG&E to recover all stranded costs -- all customers move to market prices

Success ……..???

- July, 1999-- SDG&E finalizes collection of stranded costs; all customers pay market rates for electricity; customers to receive checks totaling $390m in August 2000 (will continue to see approximately 5% savings off regulated delivery-service charge); hailed as victory for consumers
- June, 2000 -- Power prices on the PX set a new on-peak average record of $474.53/MWh as rolling blackouts plagued the Bay Area
- July, 2000 -- electric bills for June usage reach SDG&E customers; prices doubled in one month; ISO imposes $500/MWh cap
- August, 2000 -- Legislature returns; legislation to roll-back SDG&E rates moves through both chambers; at PX, price spikes continue; underscheduling reaches roughly one-third of total daily load; ISO reduces cap to $250/MWh
- September, 2000 -- Governor signs rate roll-back legislation into law

The Crisis Deepens……

- **October, 2000 -- Utilities and others start to ring the alarm bells about market dysfunction and growing debt burden; credit quality concerns begin to arise; key politicians engage in "Blame Game"**
- **November, 2000 -- FERC issues proposed orders significantly altering California market, including "soft cap" for wholesale prices; utilities seek emergency rate increases; inaction by State officials; credit quality issues increase significantly, creating reluctance by generators and marketers to sell to California utilities;**
- **December, 2000 -- Emergency orders from DOE require non-California seller to supply surplus power; FERC issues final orders; Utilities warn of bankruptcies; CPUC begins hearing on emergency rate requests; Rolling blackouts and daily Stage 3 alerts; Prices soar over $1000 per mWh in first half of month;**

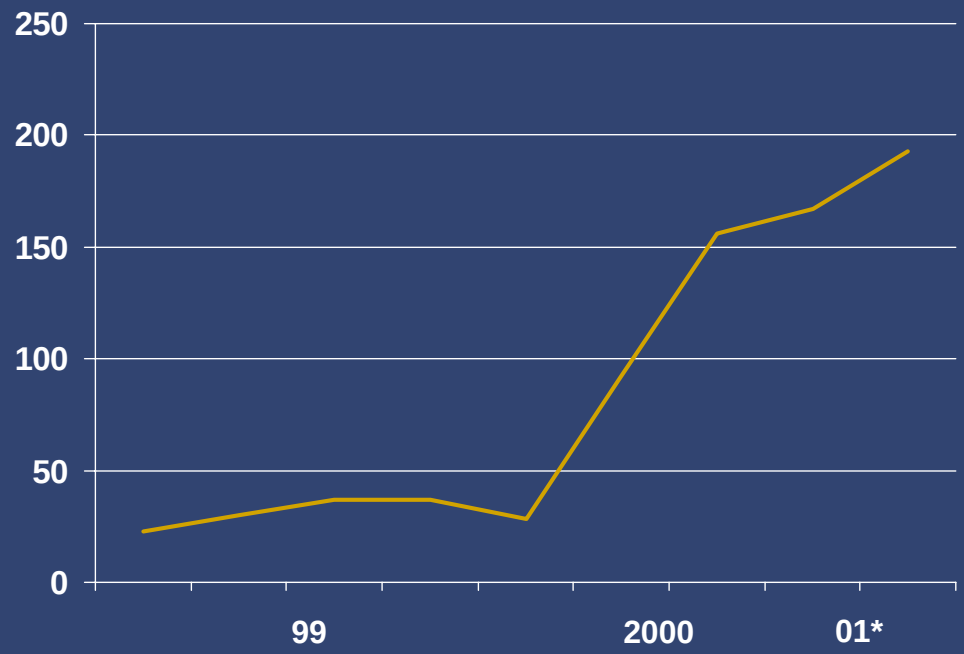
Default, Downgrades ... Disaster Looming??

- **January, 2001 -- Utilities default on more than $1 billion in securities and purchased power obligations; Federal emergency requirements extended; CPUC grants 10% temporary surcharge; Legislature approves temporary measures to avoid system collapse; Federal Court rules SCE and PG&E have right to pass through wholesale purchased power costs to retail customers under "Filed Rate Doctrine";**
- **February, 2001 -- Legislature approves $10 billion to back up long term electricity purchases by State; Utilities continue non-payments and defaults; Federal government ends emergency orders and refuses to order price caps; Utilities closer to bankruptcy as suppliers sue to collect payment;**

California's Power Crisis: Current Situation

- Wholesale power prices +10 times higher than a year ago
- Blackouts have gone from threat to reality in Northern California
- PG&E and Edison nearly bankrupt
- Suspension of CalPX operations
- State making long-term power purchases\

Southern California electricity spot prices
On-peak quarterly average
($ per MWh)



* Q1 2001 is an estimated

Source: Cambridge Energy Research Associates

Root Causes of California's Power Crisis

5. Transmission Constraints

4. Asymmetric Price Risks

3. High Gas Prices

2. Market Design flaws

1. Supply/ Demand Imbalance

1. Supply/Demand Imbalance: The Causes

Supply Side…

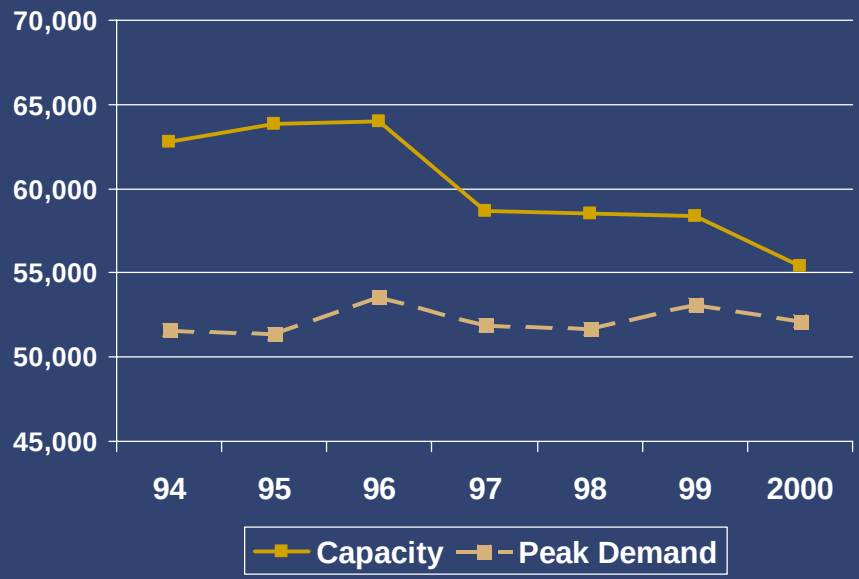
- Siting and environmental rules make building new generation very difficult
- Cap & Trade system for emission reductions limited output of some plants due to price 10x expected levels
- With reservoirs at well below historical levels, hydro generation has been reduced significantly
- Significant number of older generating plant taken out for maintenance and upgrades
- Price caps limited the attractiveness of the wholesale market

…Demand Side

- Strong economic growth resulting in rapidly expanding demand for power in both California and surrounding states
- Lack of price signals as most consumers are insulated from price spikes through capped/frozen rates
- Few effective means to access demand side reductions

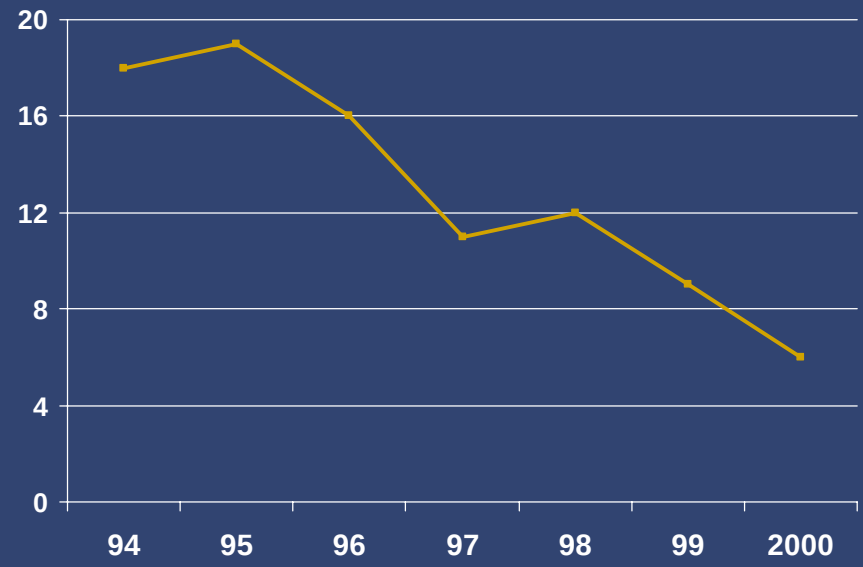
Effects Include Falling Capacity Margins...

California Capacity & Peak Demand
MW



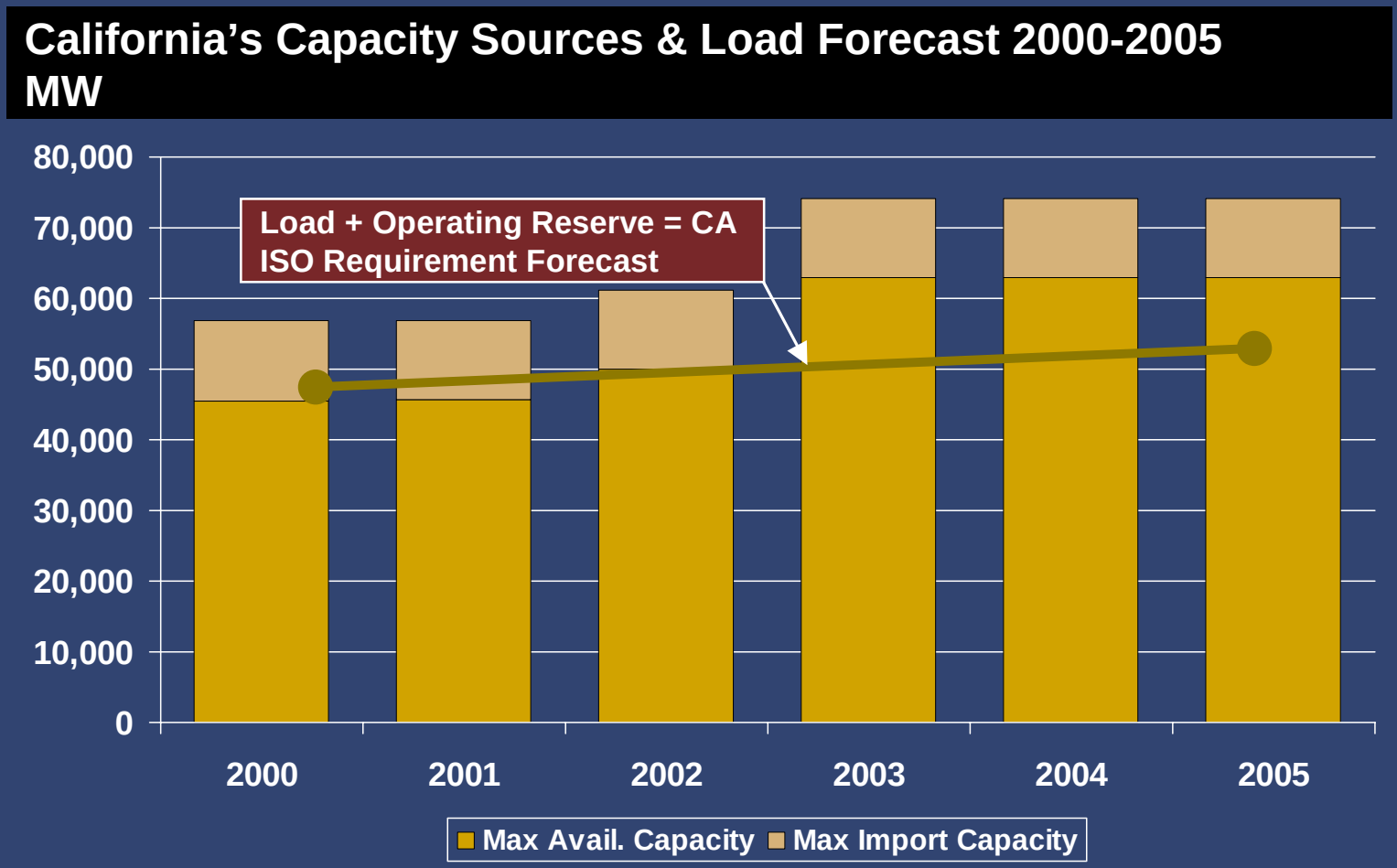
Source: Cambridge Energy Research Associates, NERC

California Capacity Margins
%



Source: Cambridge Energy Research Associates, NERC

…and a Reliance on Imports



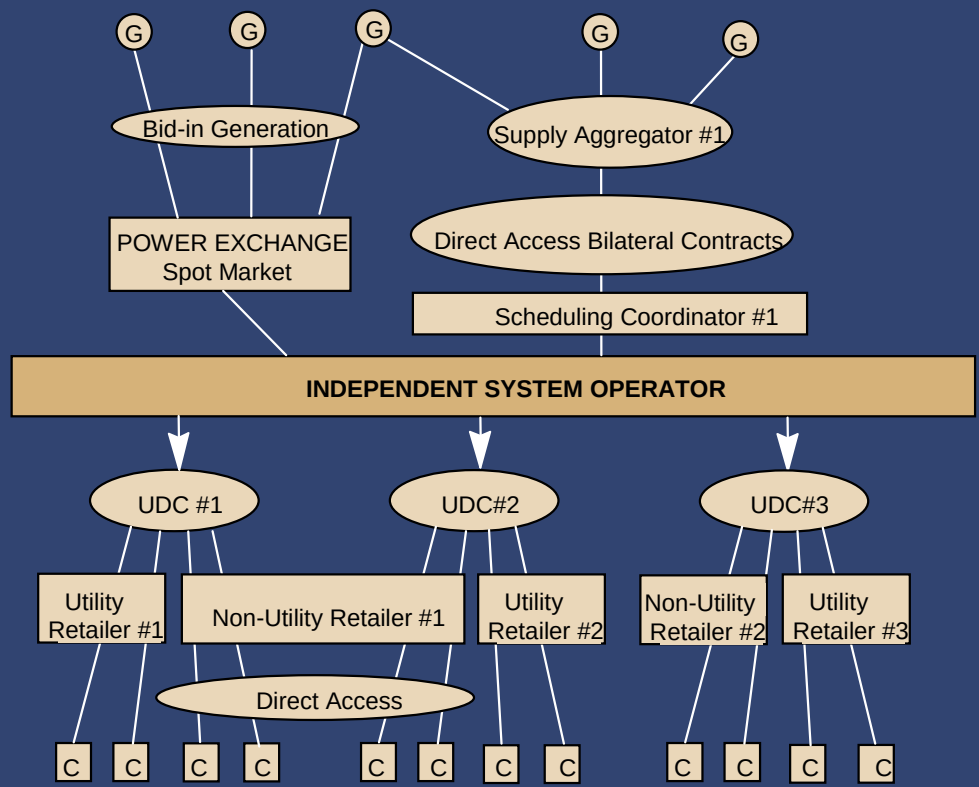
Source: California Independent System Operator

2. Market Design Flaws

Inappropriate price signals sent to generators

- **Incentives were not created to make maximum output available and made withholding potentially profitable**
- **Inconsistencies between ISO and PX market and operating rules For instance, California PX rules allowed underscheduling by both sellers and buyers**

California Market Structure



3. High Gas Prices

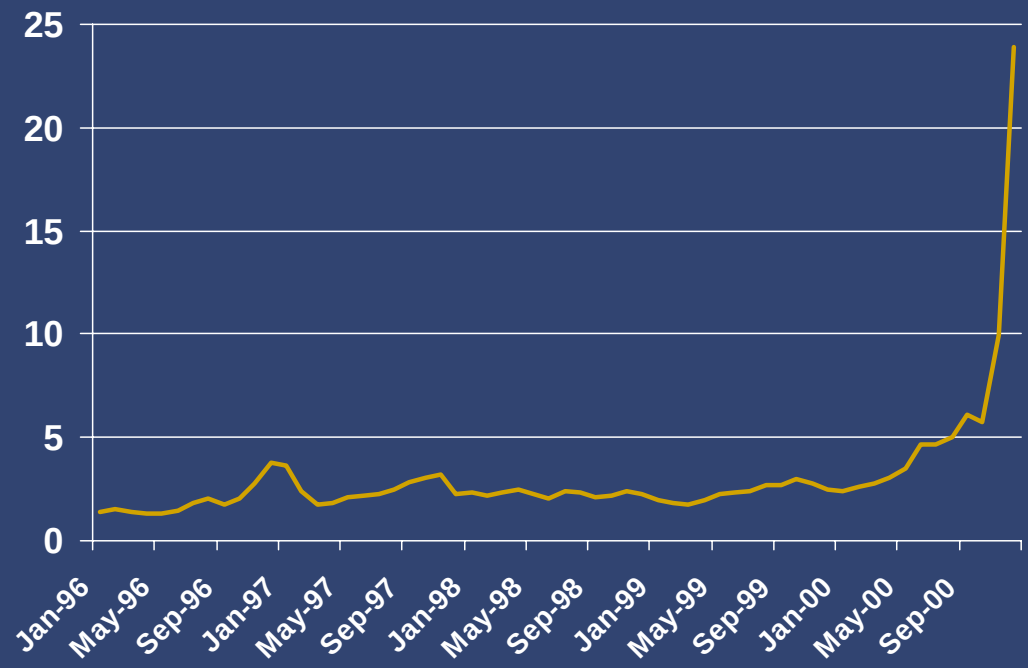
Natural gas and oil estimated to be on the margin 55-75% of the time in the WSCC (which includes California and surrounding states)*

High natural gas prices, coupled with relatively old and inefficient plant, contributed to recent power price spikes

Lack of hydro generation created incremental gas demand, driving prices up

Alliance Pipeline created new markets for Alberta gas that formerly was captive to Western US

Southern California Natural Gas Spot Prices
Average Monthly Topock Price
($ per MMBtu)



Source: Natural Gas Week

*Estimates of Cambridge Energy Research Associates

4. Asymmetric Price Risks

IOUs were required to purchase power needs from the short-term spot market and sell to consumers at capped/frozen rates

California discouraged utilities from hedging price risks

- **IOUs required to divest at least half of fossil generation (SDG&E and PG&E divested all fossil generation)**
- **IOUs were prevented from taking back long-term power purchase agreements from the buyers of the divested generation facilities**
- **All undivested generation was sold into short-term market**
- **Provided for limited ability to engage in other long-term or forward purchases**

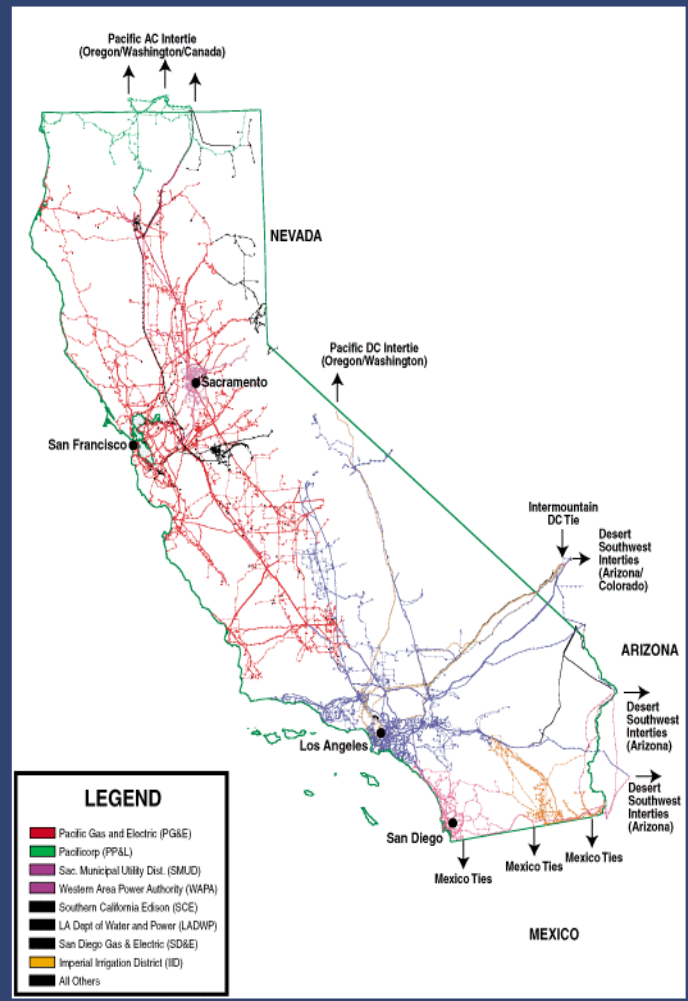
IOUs made only limited use of tools available to manage price risks

5. Transmission Constraints

Transmission constraints have contributed to recent blackouts

One of the most significant constraints is along path 15 (runs north-south through central California)

Siting and environmental rules have made it difficult to build out/upgrade transmission network



What Went Wrong?

- Assumption that competition would automatically lower prices
- Complacency, uncertainty and regulation deterred construction of new generation and transmission
  - Northwest and Interior assumed to be in perpetual surplus
  - Uncertainty about PX pricing and California demand deterred early investment
  - CEC process required at least 1 year for major projects -- key rehabilitation and re-powering projects rejected or delayed
  - Utilities lack incentives to build transmission

What Went Wrong?

- **Flawed market structure and misplaced incentives**
  - **Separation of PX and ISO made gaming easy; separate governance decreased cooperation**
  - **Mandatory utility purchases from PX, combined with PX bidding structure, drove prices unreasonably high**
  - **Utilities not permitted to hedge until it was too late**
  - **Focus only on utility market power; not suppliers'**

What Went Wrong?

- Rapid increase in customer demand seen too late
- Assumptions that gas would always be cheap were wrong; total reliance on gas as the fuel for new generation
- One sided competitive market
  - Most customers remain on utility bundled service
  - Most customers don't get price signals; if so, delayed by weeks
  - Value of demand-side pricing and controls seen as having future value, not present

Where Are We Now?

- **Statutory price caps for SDG&E customers until 2002; expected borrowing over $1billion ($4.1 billion market cap); SDG&E seeking emergency rate increases for residential and small commercial customers**
- **SoCal Edison and PG&E are on the brink of PG&E, with more than $2 billion in unpaid bills; estimates of unrecovered purchased power costs exceed $10 billion**
- **Legislature to consider "long-term" solutions in coming days**
- **February 13 is key date -- SCE's forbearance agreement with bank group ends; US District Court to consider requests for immediate rate increases under "Filed Rate Doctrine" ruling**
- **State of California continues to increase State's own credit exposure; downgrades possible**

Points to Ponder

- **Failure of public officials to address problems in Autumn 2000 has led directly to the current dire state of affairs**
- **Events in California likely to slow the trend to customer choice, but not for long; Industrials and large commercials will continue to see value in competitive markets**
- **Other regional markets are not immune from similar stresses**
- **Market volatility is likely to remain high in peak periods**
- **California shows that distributors with commodity supply obligations are significantly exposed -- and must be able to manage commodity risk … and have an escape mechanism if costs become unmanageable**

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Charge Code:	**NN3380-0578**
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Extension:	**Sally**
Origination Date:	**2-7-01**
Today's Date:	**2/9/2001**
Group:	**Energy**

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